**TITLE:** Optimizing Chronic Pain Treatment with Enhanced Neuroplastic Responsiveness (OPTIMIZE)

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**RESEARCH PROJECT DESCRIPTION:**

***Background***

Chronic pain is associated with functional and structural changes in the brain. Recent advances indicate promising opportunities to “re-open” and enhance neuroplastic responsiveness with non-pharmacological and non-invasive strategies. Strategies to maximize neuroplastic responsiveness to chronic pain treatment could enhance treatment gains by increasing neuroplasticity, learning, and positive adaptation. The intentions underlying the proposed study are to identify strategies to optimize the neurobiological environment to respond to clinical treatment interventions and override the maladaptive neuroplastic changes associated with chronic osteoarthritis pain.

***Aims***

1. *Determine whether food restriction and/or glucose administration will enhance neuroplastic responsiveness and improve learning retention thereby improving the effectiveness of guided imagery intervention in chronic pain patients;*
2. *Identify neurobiological and biological mechanisms underlying the proposed interventions.*

***Methods***

Adults with chronic knee osteoarthritis pain are randomized into one of three groups (intermittent fasting, glucose administration, control) and participate in 4 sessions over a 2-3 week period.

***Medical Student Role***

Assist with study sessions, data collection, and interpretation of findings.

***Funding***

American Pain Society and the Sharon S. Keller Chronic Pain Research Grant and UF CTSI Patient Oriented Pilot Award

***Relevant Publications***

Hensch & Bilimoria. Re-opening windows: Manipulating critical periods of brain development.

 Cerebrum 2012. pp. 1-18.

Martin et al. Caloric restriction and intermittent fasting: Two potential diets for successful brain

 aging. Ageing Research Reviews 2006;5:332-353.

Smith et al. Glucose enhancement of human memory: A comprehensive research review of the glucose

 memory facilitation effect. Neuroscience and Biobehavioral Reviews, Vol. 35 2013. pp. 770-783.